



# PI LESSONS LEARNED



## New Horizons: *A Journey to New Frontiers*



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# FIRST: AN OBSERVATION



- ❑ First \$700M+ PI-Led Mission
- ❑ First SwRI-APL Outer Planets Mission
- ❑ Unforgiving Launch Window
- ❑ RTG/Nuclear Launch

- ❑ Every mission PI to date has been a rookie at it.
- ❑ But my experience as a former engineer, as both a mission and instrument project scientist, a science team member, and as a five-time instrument PI before selection was beneficial.
- ❑ I recommend such experience.





# SECOND OBSERVATION: WHO THE PI IS



- ☐ The PI is not just a chief instrument PI.
- ☐ The PI is not a mission chief scientist.
- ☐ The PI is responsible for *all* of the mission.
- ☐ You are the mission leader.
- ☐ You are the director of the mission.

"Mars Scout missions must be headed by a single PI. The PI is responsible not only for the scientific integrity of the mission, but also for the management of the complete mission...."

- ☐ NASA and the community will be resting the fate of Scout 2 on your shoulders.





# LESSONS AND RECOMMENDATIONS I



- ❑ Eschew the “Regal PI” role: Be deeply involved.
- ❑ Put the mission before your research.
- ❑ Lead the mission, at every phase, on every day.

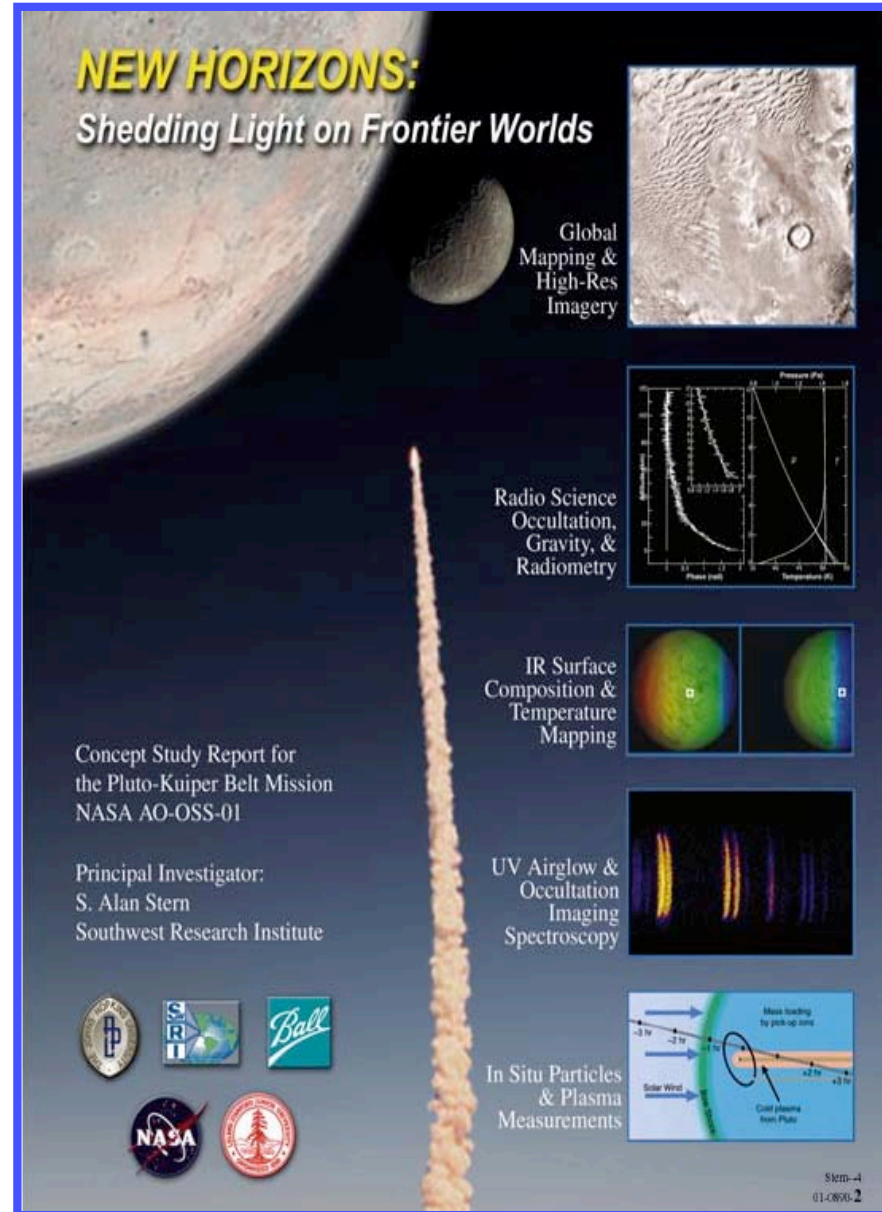




# LESSONS AND RECOMMENDATIONS II



- ☐ Get clear agreements with your Center at the outset on matters important to you.
- ☐ Choose a mission PM and other key staff carefully.
- ☐ Insist on personnel stability, particularly engineering leads.
- ☐ Make the Program Office your ally; their success is at stake with your project too.





# LESSONS AND RECOMMENDATIONS III



- ❑ Take personal responsibility for all aspects of mission development, from the outset. Abdicate this at the risk of your mission.
- ❑ Attention to detail is not micromanagement. Don't let people tell you otherwise.
- ❑ Be proactive, not reactive: Look ahead.
- ❑ Recognize the value of time: Be decisive.
- ❑ Make actions stick.
- ❑ And finally: Be there, a lot. It's just amazing what you'll learn in person (MBWA). So commit to travel: Endlessly.





# THERE ARE TWO BASIC TYPES OF PI-LED MISSIONS



- ☐ MISSIONS WHERE THE PI LEADS
- ☐ MISSIONS WHERE THE PI IS LED AROUND

WHICH DO YOU PREFER?  
YOU DECIDE.





# BACKUPS





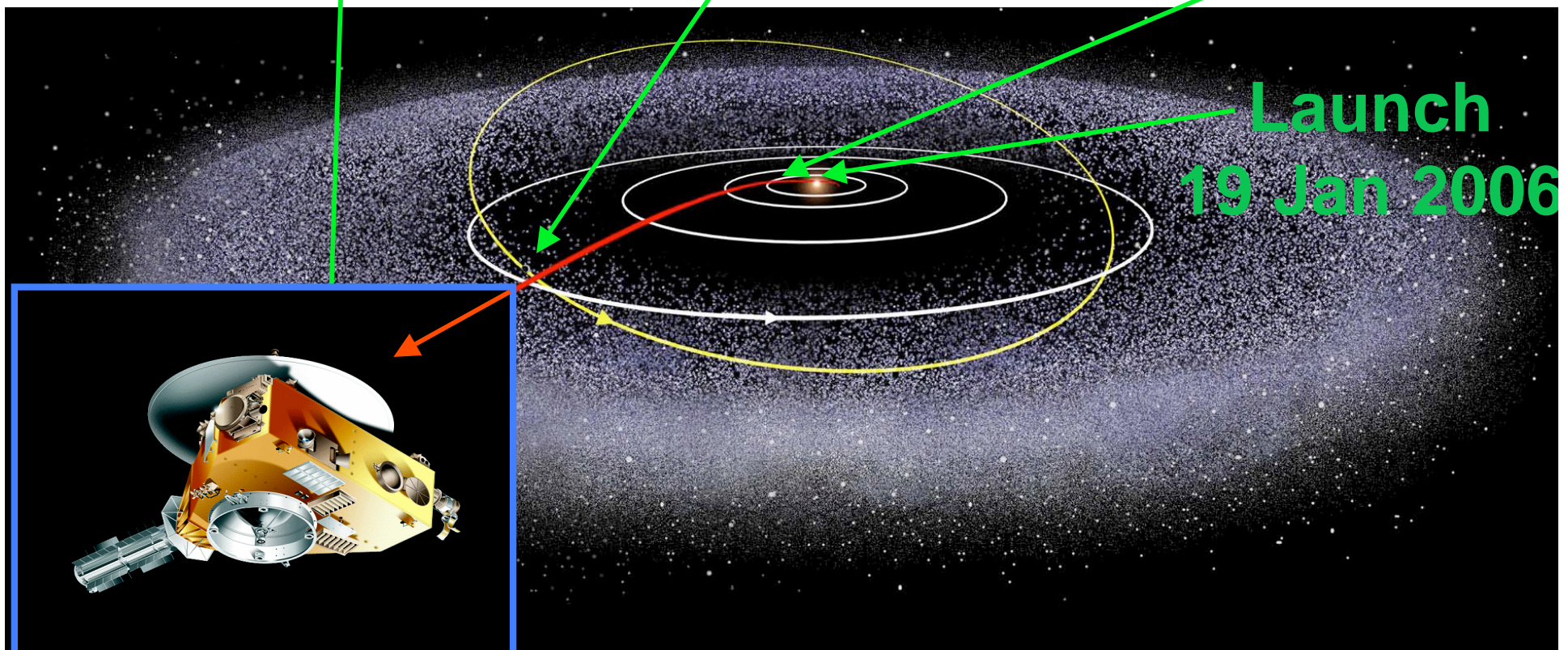


# NEW HORIZONS IS NEW FRONTIERS 1



## Flyby Reconnaissance of the Solar System's 3<sup>rd</sup> Zone

**KBOs**      **Pluto-Charon**      **Jupiter System**  
**2016-2020**      **14 July 2015**      **27 Feb 2007**





# NEW HORIZONS PROVIDED AN EXISTENCE PROOF



NEW HORIZONS DEMONSTRATED  
THAT PI LED MISSIONS OF NEW  
FRONTIERS SCOPE (\$700M) CAN  
INDEED BE SUCCESSFULLY  
DEVELOPED.







# SOME NOTABLE NH MISSION ATTRIBUTES



- ☐ First \$700M+ PI-Led Mission
- ☐ Contentious Funding Start Battles
- ☐ SwRI-APL Outer Planets Mission
- ☐ Third Stage Management
- ☐ Unforgiving Launch Window
- ☐ RTG/Nuclear Launch
- ☐ Student EPO Instrument

- ☐ **Every Mission Has Its Unique Attributes.**
- ☐ **Some Missions Are Harder Than Others.**
- ☐ **None Are Easy.**







# NEXT: THE ORG CHART



“The PI is responsible not only for the scientific integrity of the mission, but also for the management of the complete mission....”

